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13150-70089US.ST25  
SEQUENCE LISTING

<110> Minerva Biotechnologies Corporation  
BAMDAD, Cynthia, C.  
<120> Techniques and Compositions for the Diagnosis and Treatment of  
Cancer (MUC1)  
<130> 13150-70089US  
<140> PCT/US2004/027954  
<141> 2004-08-26  
<150> US 60/498,260  
<151> 2003-08-26  
<160> 66  
<170> PatentIn version 3.3  
<210> 1  
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<212> PRT  
<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 1

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15  
Thr Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30  
Ser His His His His His His  
35

<210> 2  
<211> 51  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 2

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15  
Thr Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30  
Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala His His His  
35 40 45

His His His

50

<210> 3  
 <211> 54  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 3

Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp  
 1 5 10 15

Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Pro Tyr  
 20 25 30

Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe  
 35 40 45

His His His His His His  
 50

<210> 4  
 <211> 31  
 <212> PRT  
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<220>

<223> Synthetic Peptide

<400> 4

His His His His His His Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe  
 1 5 10 15

Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu  
 20 25 30

<210> 5  
 <211> 46  
 <212> PRT  
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<220>

<223> Synthetic Peptide

<400> 5

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly  
 1 5 10 15

Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro  
 20 25 30

13150-70089US.ST25

Pro Ala His Gly Val Thr Ser Ala His His His His His His  
35 40 45

<210> 6  
<211> 33  
<212> PRT  
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<220>

<223> Synthetic Peptide

<400> 6

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15  
Thr Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30  
Ser

<210> 7  
<211> 45  
<212> PRT  
<213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 7

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15  
Thr Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30  
Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala  
35 40 45

<210> 8  
<211> 25  
<212> PRT  
<213> Homo sapiens

<400> 8

Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val  
1 5 10 15  
Val Gln Leu Thr Leu Ala Phe Arg Glu  
20 25

<210> 9  
<211> 40  
<212> PRT  
<213> Homo sapiens

&lt;400&gt; 9

Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly  
 1 5 10 15  
 Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro  
 20 25 30  
 Pro Ala His Gly Val Thr Ser Ala  
 35 40

&lt;210&gt; 10

&lt;211&gt; 1255

&lt;212&gt; PRT

&lt;213&gt; Homo sapiens

&lt;400&gt; 10

Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr  
 1 5 10 15  
 Val Leu Thr Val Val Thr Gly Ser Gly His Ala Ser Ser Thr Pro Gly  
 20 25 30  
 Gly Glu Lys Glu Thr Ser Ala Thr Gln Arg Ser Ser Val Pro Ser Ser  
 35 40 45  
 Thr Glu Lys Asn Ala Val Ser Met Thr Ser Ser Val Leu Ser Ser His  
 50 55 60  
 Ser Pro Gly Ser Gly Ser Ser Thr Thr Gln Gly Gln Asp Val Thr Leu  
 65 70 75 80  
 Ala Pro Ala Thr Glu Pro Ala Ser Gly Ser Ala Ala Thr Trp Gly Gln  
 85 90 95  
 Asp Val Thr Ser Val Pro Val Thr Arg Pro Ala Leu Gly Ser Thr Thr  
 100 105 110  
 Pro Pro Ala His Asp Val Thr Ser Ala Pro Asp Asn Lys Pro Ala Pro  
 115 120 125  
 Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
 130 135 140  
 Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
 145 150 155 160  
 Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
 165 170 175  
 Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
 180 185 190  
 Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
 195 200 205  
 Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
 210 215 220  
 Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser

225		230		235		240
Ala	Pro	Asp	Thr	Arg 245	Pro	Ala
Gly	Val	Thr	Ser 260	Ala	Pro	Asp
Pro	Pro	Ala 275	His	Gly	Val	Thr
Gly	Ser 290	Thr	Ala	Pro	Pro	Ala
Arg	Pro	Ala	Pro	Gly	Ser 310	Thr
Ala	Pro	Asp	Thr	Arg 325	Pro	Ala
Gly	Val	Thr	Ser 340	Ala	Pro	Asp
Pro	Pro	Ala 355	His	Gly	Val	Thr
Gly	Ser 370	Thr	Ala	Pro	Pro	Ala
Arg	Pro	Ala	Pro	Gly	Ser 390	Thr
Ala	Pro	Asp	Thr	Arg 405	Pro	Ala
Gly	Val	Thr	Ser 420	Ala	Pro	Asp
Pro	Pro	Ala 435	His	Gly	Val	Thr
Gly	Ser 450	Thr	Ala	Pro	Pro	Ala
Arg	Pro	Ala	Pro	Gly	Ser 470	Thr
Ala	Pro	Asp	Thr	Arg 485	Pro	Ala
Gly	Val	Thr	Ser 500	Ala	Pro	Asp
Pro	Pro	Ala 515	His	Gly	Val	Thr
Gly	Ser 530	Thr	Ala	Pro	Pro	Ala
Arg	Pro	Ala	Pro	Gly	Ser 550	Thr

13150-70089US.ST25

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
565 570 575

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
580 585 590

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
595 600 605

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
610 615 620

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
625 630 635 640

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
645 650 655

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
660 665 670

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
675 680 685

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
690 695 700

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
705 710 715 720

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
725 730 735

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
740 745 750

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
755 760 765

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
770 775 780

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
785 790 795 800

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
805 810 815

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
820 825 830

Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
835 840 845

Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
850 855 860

Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
865 870 875 880

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
885 890 895

13150-70089US.ST25

Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
 900 905 910  
 Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
 915 920 925  
 Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Asn  
 930 935 940  
 Arg Pro Ala Leu Gly Ser Thr Ala Pro Pro Val His Asn Val Thr Ser  
 945 950 955 960  
 Ala Ser Gly Ser Ala Ser Gly Ser Ala Ser Thr Leu Val His Asn Gly  
 965 970 975  
 Thr Ser Ala Arg Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe  
 980 985 990  
 Ser Ile Pro Ser His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His  
 995 1000 1005  
 Ser Thr Lys Thr Asp Ala Ser Ser Thr His His Ser Ser Val Pro  
 1010 1015 1020  
 Pro Leu Thr Ser Ser Asn His Ser Thr Ser Pro Gln Leu Ser Thr  
 1025 1030 1035  
 Gly Val Ser Phe Phe Phe Leu Ser Phe His Ile Ser Asn Leu Gln  
 1040 1045 1050  
 Phe Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu  
 1055 1060 1065  
 Leu Gln Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln  
 1070 1075 1080  
 Gly Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser  
 1085 1090 1095  
 Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn  
 1100 1105 1110  
 Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala  
 1115 1120 1125  
 Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp  
 1130 1135 1140  
 Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val Pro Gly  
 1145 1150 1155  
 Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu Val Ala Leu  
 1160 1165 1170  
 Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg  
 1175 1180 1185  
 Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr  
 1190 1195 1200  
 His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr

1205

1210

1215

Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser  
 1220 1225 1230  
 Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val  
 1235 1240 1245  
 Ala Ala Ala Ser Ala Asn Leu  
 1250 1255

<210> 11  
 <211> 302  
 <212> PRT  
 <213> Homo sapiens

<400> 11

Ala Ala Ala Lys Glu Gly Lys Lys Ser Arg Asp Arg Glu Arg Pro Pro  
 1 5 10 15  
 Ser Val Pro Ala Leu Arg Glu Gln Pro Pro Glu Thr Glu Pro Gln Pro  
 20 25 30  
 Ala Trp Lys Met Pro Arg Ser Cys Cys Ser Arg Ser Gly Ala Leu Leu  
 35 40 45  
 Leu Ala Leu Leu Leu Gln Ala Ser Met Glu Val Arg Gly Trp Cys Leu  
 50 55 60  
 Glu Ser Ser Gln Cys Gln Asp Leu Thr Thr Glu Ser Asn Leu Leu Glu  
 65 70 75 80  
 Cys Ile Arg Ala Cys Lys Pro Asp Leu Ser Ala Glu Thr Pro Met Phe  
 85 90 95  
 Pro Gly Asn Gly Asp Glu Gln Pro Leu Thr Glu Asn Pro Arg Lys Tyr  
 100 105 110  
 Val Met Gly His Phe Arg Trp Asp Arg Phe Gly Arg Arg Asn Ser Ser  
 115 120 125  
 Ser Ser Gly Ser Ser Gly Ala Gly Gln Lys Arg Glu Asp Val Ser Ala  
 130 135 140  
 Gly Glu Asp Cys Gly Pro Leu Pro Glu Gly Gly Pro Glu Pro Arg Ser  
 145 150 155 160  
 Asp Gly Ala Lys Pro Gly Pro Arg Glu Gly Lys Arg Ser Tyr Ser Met  
 165 170 175  
 Glu His Phe Arg Trp Gly Lys Pro Val Gly Lys Lys Arg Arg Pro Val  
 180 185 190  
 Lys Val Tyr Pro Asn Gly Ala Glu Asp Glu Ser Ala Glu Ala Phe Pro  
 195 200 205  
 Leu Glu Phe Lys Arg Glu Leu Thr Gly Gln Arg Leu Arg Glu Gly Asp  
 210 215 220  
 Gly Pro Asp Gly Pro Ala Asp Asp Gly Ala Gly Ala Gln Ala Asp Leu  
 225 230 235 240

13150-70089US.ST25

Glu His Ser Leu Leu Val Ala Ala Glu Lys Lys Asp Glu Gly Pro Tyr  
 245 250 255  
 Arg Met Glu His Phe Arg Trp Gly Ser Pro Pro Lys Asp Lys Arg Tyr  
 260 265 270  
 Gly Gly Phe Met Thr Ser Glu Lys Ser Gln Thr Pro Leu Val Thr Leu  
 275 280 285  
 Phe Lys Asn Ala Ile Ile Lys Asn Ala Tyr Lys Lys Gly Glu  
 290 295 300

<210> 12  
 <211> 31  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 12

His His His His His His Ser Ser Ser Ser Gly Ser Ser Ser Ser Gly  
 1 5 10 15  
 Ser Ser Ser Ser Gly Gly Arg Gly Asp Ser Gly Arg Gly Asp Ser  
 20 25 30

<210> 13  
 <211> 19  
 <212> PRT  
 <213> Artificial Sequence

<220>

<223> Synthetic Peptide

<400> 13

His His His His His His Arg Gly Glu Phe Thr Gly Thr Tyr Ile Thr  
 1 5 10 15  
 Ala Val Thr

<210> 14  
 <211> 12  
 <212> PRT  
 <213> Homo sapiens

<400> 14

Thr Phe Ile Ala Ile Lys Pro Asp Gly Val Gln Arg  
 1 5 10

<210> 15  
 <211> 18

13150-70089US.ST25

<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (3)..(3)  
<223> Xaa can be any naturally occurring amino acid

<400> 15

Val Met Xaa Leu Gly Glu Thr Asn Pro Ala Asp Ser Lys Pro Gly Thr  
1 5 10 15

Ile Arg

<210> 16  
<211> 17  
<212> PRT  
<213> Homo sapiens

<400> 16

Val Met Leu Gly Glu Thr Asn Pro Ala Asp Ser Lys Pro Gly Thr Ile  
1 5 10 15

Arg

<210> 17  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 17

Asn Ile Ile His Gly Ser Asp Ser Val Lys  
1 5 10

<210> 18  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 18

Gly Leu Val Gly Glu Ile Ile Lys Arg  
1 5

<210> 19  
<211> 8  
<212> PRT  
<213> Homo sapiens

<400> 19

Gly Leu Val Gly Glu Ile Ile Lys

1 5

<210> 20  
 <211> 21  
 <212> PRT  
 <213> Homo sapiens

<220>  
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 <222> (3)..(3)  
 <223> Xaa can be any naturally occurring amino acid

<220>  
 <221> misc\_feature  
 <222> (12)..(12)  
 <223> Xaa can be any naturally occurring amino acid

<400> 20

Tyr Met Xaa His Ser Gly Pro Val Val Ala Met Xaa Val Trp Glu Gly  
 1 5 10 15

Leu Asn Val Val Lys  
 20

<210> 21  
 <211> 19  
 <212> PRT  
 <213> Homo sapiens

<400> 21

Ala Ala Phe Asp Asp Ala Ile Ala Glu Leu Asp Thr Leu Ser Glu Glu  
 1 5 10 15

Ser Tyr Lys

<210> 22  
 <211> 18  
 <212> PRT  
 <213> Homo sapiens

<220>  
 <221> misc\_feature  
 <222> (8)..(8)  
 <223> Xaa can be any naturally occurring amino acid

<400> 22

Ala Ala Ser Asp Ile Ala Met Xaa Thr Glu Leu Pro Pro Thr His Pro  
 1 5 10 15

Ile Arg

<210> 23

13150-70089US.ST25

<211> 11  
<212> PRT  
<213> Homo sapiens

<400> 23

Tyr Leu Ala Glu Phe Ala Thr Gly Asn Asp Arg  
1 5 10

<210> 24  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 24

Asp Ser Thr Leu Ile Met Gln Leu Leu Arg  
1 5 10

<210> 25  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 25

Tyr Asp Glu Met Val Glu Ser Met Lys  
1 5

<210> 26  
<211> 14  
<212> PRT  
<213> Homo sapiens

<220>  
<221> misc\_feature  
<222> (5)..(5)  
<223> Xaa can be any naturally occurring amino acid

<400> 26

Val Ala Gly Met Xaa Asp Val Glu Leu Thr Val Glu Glu Arg  
1 5 10

<210> 27  
<211> 12  
<212> PRT  
<213> Homo sapiens

<400> 27

His Leu Ile Pro Ala Ala Asn Thr Gly Glu Ser Lys  
1 5 10

<210> 28  
<211> 19  
<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (12)..(12)

<223> Xaa can be any naturally occurring amino acid

<400> 28

Asp Pro Asp Ala Gln Pro Gly Gly Glu Leu Met Xaa Leu Gly Gly Thr  
1 5 10 15

Asp Ser Lys

<210> 29

<211> 18

<212> PRT

<213> Homo sapiens

<400> 29

Asp Pro Asp Ala Gln Pro Gly Gly Glu Leu Met Leu Gly Gly Thr Asp  
1 5 10 15

Ser Lys

<210> 30

<211> 18

<212> PRT

<213> Homo sapiens

<220>

<221> misc\_feature

<222> (15)..(15)

<223> Xaa can be any naturally occurring amino acid

<400> 30

Ile Ser Val Asn Asn Val Leu Pro Val Phe Asp Asn Leu Met Xaa Gln  
1 5 10 15

Gln Lys

<210> 31

<211> 17

<212> PRT

<213> Homo sapiens

<400> 31

Ile Ser Val Asn Asn Val Leu Pro Val Phe Asp Asn Leu Met Gln Gln  
1 5 10 15

Lys

13150-70089US.ST25

<210> 32  
<211> 10  
<212> PRT  
<213> Homo sapiens

<400> 32

Gln Pro Gly Ile Thr Phe Ile Ala Ala Lys  
1 5 10

<210> 33  
<211> 16  
<212> PRT  
<213> Homo sapiens

<400> 33

Gly Leu Gly Thr Asp Glu Glu Ser Ile Leu Thr Leu Leu Thr Ser Arg  
1 5 10 15

<210> 34  
<211> 13  
<212> PRT  
<213> Homo sapiens

<400> 34

Asp Leu Leu Asp Asp Leu Lys Ser Glu Leu Thr Gly Lys  
1 5 10

<210> 35  
<211> 9  
<212> PRT  
<213> Homo sapiens

<400> 35

Ser Glu Ile Asp Leu Phe Asn Ile Arg  
1 5

<210> 36  
<211> 45  
<212> PRT  
<213> Homo sapiens

<400> 36

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15

Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30

Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala  
35 40 45

<210> 37  
<211> 146

13150-70089US.ST25

<212> PRT  
<213> Homo sapiens

<400> 37

Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys  
1 5 10 15  
Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val  
20 25 30  
Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val Pro  
35 40 45  
Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu Val Ala Leu  
50 55 60  
Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg Lys  
65 70 75 80  
Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr His Pro  
85 90 95  
Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr Val Pro Pro  
100 105 110  
Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn Gly  
115 120 125  
Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser Ala  
130 135 140  
Asn Leu  
145

<210> 38  
<211> 171  
<212> PRT  
<213> Homo sapiens

<400> 38

Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val  
1 5 10 15  
Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp  
20 25 30  
Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr  
35 40 45  
Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe  
50 55 60  
Ser Ala Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu  
65 70 75 80  
Val Leu Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala  
85 90 95  
Leu Ala Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile  
100 105 110

13150-70089US.ST25

Phe Pro Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr  
 115 120 125  
 His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro  
 130 135 140  
 Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr  
 145 150 155 160  
 Asn Pro Ala Val Ala Ala Ala Ser Ala Asn Leu  
 165 170

<210> 39  
 <211> 275  
 <212> PRT  
 <213> Homo sapiens  
 <400> 39

Ala Thr Thr Thr Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile Pro Ser  
 1 5 10 15  
 His His Ser Asp Thr Pro Thr Thr Leu Ala Ser His Ser Thr Lys Thr  
 20 25 30  
 Asp Ala Ser Ser Thr His His Ser Thr Val Pro Pro Leu Thr Ser Ser  
 35 40 45  
 Asn His Ser Thr Ser Pro Gln Leu Ser Thr Gly Val Ser Phe Phe Phe  
 50 55 60  
 Leu Ser Phe His Ile Ser Asn Leu Gln Phe Asn Ser Ser Leu Glu Asp  
 65 70 75 80  
 Pro Ser Thr Asp Tyr Gln Glu Leu Gln Arg Asp Ile Ser Glu Met  
 85 90 95  
 Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser Asn Ile  
 100 105 110  
 Lys Phe Arg Pro Gly Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg  
 115 120 125  
 Glu Gly Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr  
 130 135 140  
 Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser  
 145 150 155 160  
 Val Ser Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala Gly Val  
 165 170 175  
 Pro Gly Trp Gly Ile Ala Leu Leu Val Leu Val Cys Val Leu Val Ala  
 180 185 190  
 Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala Val Cys Gln Cys Arg Arg  
 195 200 205  
 Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro Ala Arg Asp Thr Tyr His  
 210 215 220

13150-70089US.ST25

Pro Met Ser Glu Tyr Pro Thr Tyr His Thr His Gly Arg Tyr Val Pro  
225 230 235 240

Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn  
245 250 255

Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro Ala Val Ala Ala Ala Ser  
260 265 270

Ala Asn Leu  
275

<210> 40  
<211> 233  
<212> PRT  
<213> Homo sapiens  
<400> 40

Gly Ser Gly His Ala Ser Ser Thr Pro Gly Gly Glu Lys Glu Thr Ser  
1 5 10 15

Ala Thr Gln Arg Ser Ser Val Pro Ser Ser Thr Glu Lys Asn Ala Phe  
20 25 30

Asn Ser Ser Leu Glu Asp Pro Ser Thr Asp Tyr Tyr Gln Glu Leu Gln  
35 40 45

Arg Asp Ile Ser Glu Met Phe Leu Gln Ile Tyr Lys Gln Gly Gly Phe  
50 55 60

Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro Gly Ser Val Val Val Gln  
65 70 75 80

Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn Val His Asp Met Glu  
85 90 95

Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala Ser Arg Tyr Asn Leu  
100 105 110

Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro Phe Pro Phe Ser Ala  
115 120 125

Gln Ser Gly Ala Gly Val Pro Gly Trp Gly Ile Ala Leu Leu Val Leu  
130 135 140

Val Cys Val Leu Val Ala Leu Ala Ile Val Tyr Leu Ile Ala Leu Ala  
145 150 155 160

Val Cys Gln Cys Arg Arg Lys Asn Tyr Gly Gln Leu Asp Ile Phe Pro  
165 170 175

Ala Arg Asp Thr Tyr His Pro Met Ser Glu Tyr Pro Thr Tyr His Thr  
180 185 190

His Gly Arg Tyr Val Pro Pro Ser Ser Thr Asp Arg Ser Pro Tyr Glu  
195 200 205

Lys Val Ser Ala Gly Asn Gly Gly Ser Ser Leu Ser Tyr Thr Asn Pro  
210 215 220

Ala Val Ala Ala Thr Ser Ala Asn Leu  
225 230

<210> 41  
<211> 863  
<212> PRT  
<213> Homo sapiens

<400> 41

Leu Asp Pro Arg Val Arg Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
1 5 10 15  
Gly Ser Thr Ala Pro Gln Ala His Gly Val Thr Ser Ala Pro Asp Thr  
20 25 30  
Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
35 40 45  
Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
50 55 60  
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
65 70 75 80  
Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
85 90 95  
Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
100 105 110  
Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
115 120 125  
Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
130 135 140  
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
145 150 155 160  
Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
165 170 175  
Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
180 185 190  
Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
195 200 205  
Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
210 215 220  
Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
225 230 235 240  
Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
245 250 255  
Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr  
260 265 270  
Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser

275

280

285

Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His  
 290 295 300  
 Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro Gly Ser Thr Ala  
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 370 375 380  
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 Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
 405 410 415  
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 Arg Pro Ala Pro Gly Ser Thr Ala Pro Pro Ala His Gly Val Thr Ser  
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 Pro Pro Ala His Gly Val Thr Ser Ala Pro Asp Thr Arg Pro Ala Pro  
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 530 535 540  
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 Pro Pro Val His Asn Val Thr Ser Ala Ser Gly Ser Ala Ser Gly Ser  
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 Ala Ser Thr Leu Val His Asn Gly Thr Ser Ala Arg Ala Thr Thr Thr  
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 Pro Ala Ser Lys Ser Thr Pro Phe Ser Ile Pro Ser His His Ser Asp  
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## 13150-70089US.ST25

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 Tyr Lys Gln Gly Gly Phe Leu Gly Leu Ser Asn Ile Lys Phe Arg Pro  
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 Gly Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile  
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 Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala  
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 Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val  
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 Tyr Pro Thr Tyr His Thr His Gly Arg Tyr Val Pro Pro Ser Ser Thr  
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 Asp Arg Ser Pro Tyr Glu Lys Val Ser Ala Gly Asn Gly Gly Ser Ser  
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## 13150-70089US.ST25

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<210> 44  
 <211> 1132  
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<400> 44	
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13150-70089US.ST25

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 <212> DNA  
 <213> Homo sapiens

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13150-70089US.ST25  
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<212> DNA  
<213> Homo sapiens

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13150-70089US.ST25

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 <212> PRT  
 <213> Homo sapiens

<400> 47

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<210> 48  
 <211> 4003  
 <212> DNA  
 <213> Homo sapiens

<400> 48

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## 13150-70089US.ST25

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13150-70089US.ST25

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<223> PCR Primer

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<210> 56  
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<220>

<223> PCR Primer

<400> 56  
 tgctcctcac agtgcttaca ggttctgggc atgcaagct

39

<210> 57  
 <211> 32  
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<220>

<223> PCR Primer

<400> 57  
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32

<210> 58  
 <211> 23  
 <212> PRT  
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<400> 58

Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr  
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Val Leu Thr Val Val Thr Ala

20

<210> 59  
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 <212> PRT  
 <213> Homo sapiens

<400> 59

Met Thr Pro Gly Thr Gln Ser Pro Phe Phe Leu Leu Leu Leu Leu Thr  
 1 5 10 15

Val Leu Thr Val Val Thr Ala Gly  
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<210> 60  
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 <212> PRT  
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<220>

<223> Synthetic Peptide

<400> 60

Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr  
 1 5 10 15

Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser  
 20 25 30

Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala His His His His  
 35 40 45

His His  
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<210> 61  
 <211> 63  
 <212> PRT  
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<220>

<223> Synthetic Peptide

<400> 61

Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn  
 1 5 10 15

Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala  
 20 25 30

Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro  
 35 40 45

Phe Pro Phe Ser Ala Gln Ser Gly Ala His His His His His His  
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<210> 62  
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<223> Synthetic Peptide

<400> 62

His His His His His His Ser Val Val Val Gln Leu Thr Leu Ala Phe  
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Arg Glu Gly

<210> 63  
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 <212> PRT  
 <213> Homo sapiens

<400> 63

Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr  
 1 5 10 15

Glu Ala Ala Ser Arg Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser  
 20 25 30

Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala  
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<210> 64  
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<220>

<223> Synthetic Peptide

<400> 64

Thr Ile Asn Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr  
 1 5 10 15

Glu Ala Ala Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser  
 20 25 30

Asp Val Pro Phe Pro Phe Ser Ala Gln Ser Gly Ala  
 35 40

<210> 65  
 <211> 13  
 <212> PRT  
 <213> Homo sapiens

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<400> 65

Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly  
1 5 10

<210> 66

<211> 57

<212> PRT

<213> Homo sapiens

<400> 66

Ser Val Val Val Gln Leu Thr Leu Ala Phe Arg Glu Gly Thr Ile Asn  
1 5 10 15

Val His Asp Val Glu Thr Gln Phe Asn Gln Tyr Lys Thr Glu Ala Ala  
20 25 30

Ser Pro Tyr Asn Leu Thr Ile Ser Asp Val Ser Val Ser Asp Val Pro  
35 40 45

Phe Pro Phe Ser Ala Gln Ser Gly Ala  
50 55  
3

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